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Unlocking Aloe Vera's Healing Secrets

ABCNews.com

Lee Dye

For thousands of years, humans have turned to a cactus-like plant that has mysterious abilities to heal wounds.

But aloe vera, a succulent that is actually a member of the lily family, has often been shunned by the scientific community because no one could figure out how this native of northern Africa could work its miracles.

Now, scientists are inching closer to understanding why the cooling liquid from the fat leaf of an aloe vera plant can make the hurt go away.

It doesn't take a pharmaceutical company to make it work. The plant does it all by itself, which is why the ancient Egyptians turned to it more than 3,500 years ago, and the ancient Greeks and others used it to heal wounds and even clear up constipation.

Gooley and Nutritious

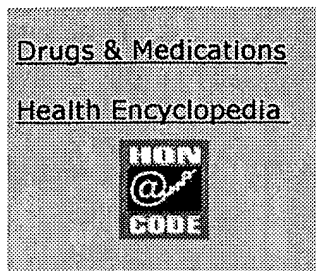
The picture is still a bit murky, because every researcher who tackles the problem seems to come up with a different answer. Some say the gooley gel from inside the leaf reduces inflammation, thus helping the healing process, and there is substantial

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helping the healing process, and there is substantial evidence that's at least part of the equation.

Others say it's because of the rich mixture of vitamins and minerals contained in the plant, which is actually about 96 percent water. Still others say aloe acts as a moisturizer, and wounds need moisture to heal.

"If you read the aloe literature there's a whole diversity of different biological activity that individual investigators have seen," says immunologist Ian Tizard of Texas A&M in College Station. "So you could make the case that every investigator has a favorite pathway."

No one doubts these days that it works, although it's not the cure-all that some people claim. But why it works is still under debate.

"We're trying to sweat out what the mechanisms are," Tizard says.

In his own research, Tizard has found something quite different about the aloe vera, and it sets it apart from all other plants. Plant cell walls are mainly cellulose, but they also have a complex carbohydrate called a "**pectin**" that forms a jelly when combined with acid and sugar. **Pectin** from citrus products is widely used in the food industry.

"It's what stops your strawberry jam from being runny," Tizard says.

But when Tizard and his colleagues examined the **pectin** found in aloe vera, they found it quite different from the **pectin** found in other plants.

"Its sugar content was somewhat different, and it was curious in that it formed solid gels with either calcium or with sodium" rather than just sugars, he says.

Cell Cement

But the real surprise came when they took the pure aloe **pectin** that they had isolated in their lab and applied it to small biopsy puncture wounds in rats and pigs. It made the wounds heal faster, Tizard says.

"So it's clearly one of the mechanisms [behind the healing power of aloe]," he says. "But there may be others."

This, he thinks, is what happens when aloe **pectin** is applied to a wound:

As a wound heals, the cells around it are stimulated

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to divide and grow into the wound. The stimulant is something called a growth factor, usually a vitamin that affects the growth of an organism. Most growth factors, however, degrade quickly, slowing the healing process.

But when the researchers added the aloe **pectin**, they found that it served as a **binding agent**, welding growth factors together and thus protecting them from degradation.

"So we believe that when we drop this **pectin** into a wound, it forms a soft gel and then binds the growth factors and makes them persist for much longer," Tizard says. "The effect we see is a significant acceleration of wound healing."

The healing power is particularly potent for older victims, he says. Rats and pigs used in research are usually young, healthy animals, and "they heal pretty darn well anyway," he says. So well, in fact, that it was hard to tell much difference when aloe vera was used.

So the researchers switched to older animals and found a significant improvement.

Wounds that normally would take three weeks to heal actually healed in two, he says.

That's important, he adds, because the kinds of wounds that aloe vera seems to work best on are commonly associated with old age, like bed sores and pressure ulcers.

All of which brings us to this question: How did those ancient folks figure out that this otherwise unspectacular plant could do such spectacular things for them?

Not an AIDS, Cancer Cure

Most likely it was just because the gel from the leaf of the plant just feels good to the touch. It's a bit slimy, but it's cool and moisturizing. In time someone thousands of years ago stumbled across the fact that it also lessened the sting of the wasp, or a cut on the hand.

Of course, that begs the question of how somebody thousands of years ago discovered the other miracle cure that aloe vera has to offer. The rind makes an effective laxative, apparently because it irritates the heck out of the digestive track.

But it doesn't do as much for us as some people think. Tizard got into the research at the request of a Dallas company that was marketing an aloe vera

drink. "They found they couldn't keep it in stock," he says.

The company did a little research and found that the drink was in great demand among AIDS patients because they thought it was doing them some good.

"So they started a research program to see if that might be the case, and that's where I got involved in it," he says.

Unfortunately, a clinical trial revealed that "it didn't do any good," he says.

Likewise for cancer, although some still claim that the plant is a good anti-cancer **agent**.

But of course we still don't know all the answers. It has taken at least 4,000 years just to get this far.

Lee Dye's column appears weekly on ABCNEWS.com. A former science writer for the Los Angeles Times , he now lives in Juneau, Alaska.

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